

# **Knowledge Management**

**At Marshall Space Flight Center**

Jeanette Johnson  
NASA Knowledge Management Team  
Information Services Department.



## Knowledge Management at MSFC

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# MSFC Information Services Department

Tim Baldrige  
Center Operations Directorate  
Marshall Space Flight Center



## Knowledge Management at MSFC

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### **MSFC Information Services Department**

- Knowledge Services Group
  - Information Services Team
  - Web Services Team
  - Knowledge Services Team
- MSFC Services Group
- Agency Services Group



## Knowledge Management at MSFC

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### Information Management Team

- MSFC Elements of NASA Scientific and Technical Information Program (NASA STI)
  - Technical Reports
    - Marshall Technical Report Server (MTRS)
  - Images
    - Marshall Image eXchange (MIX)
- Marshall Documentation Managed using Documentum
  - Officially released engineering drawings, technical, and other documentation for majority of MSFC programs and projects.
  - MSFC Management Directives System



## Knowledge Management at MSFC

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### **MSFC Elements of NASA STI**

- Technical Reports
  - Marshall Technical Report Server (MTRS)
  - Full-text of published MSFC STI reports, relatively complete 1991-2001; selected entries pre-1991. <http://mtrs.msfc.nasa.gov/mtrs/>
  - Operational element of the NASA Technical Report Server (NTRS), a system under redesign to incorporate XML and Buckets technology in correlation with the Open Architecture Initiative (OAI)



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### MSFC Elements of NASA STI

- Images
  - Marshall Image eXchange (MIX) <http://mix.msfc.nasa.gov/>
    - Searchable database of images representing MSFC missions/programs past, present, and future
  - Operational element of the NASA Image exchange (NIX) <http://nix.nasa.gov/>
  - MSFC participates in the Great Images in NASA (GRIN) web site.
  - [http://grin.hq.nasa.gov/BROWSE/MSFC\\_1.html](http://grin.hq.nasa.gov/BROWSE/MSFC_1.html)



## Knowledge Management at MSFC

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### MSFC Elements of NASA STI

- MSFC/NASA Documentation Repository
  - Managed by Documentum document management system
  - Officially released engineering drawings, technical, and other documentation for majority of MSFC programs and projects.
  - MSFC Management Directives System  
<https://msfcmr03.msfc.nasa.gov/directives/directives.htm>
  - Automated review/approval process, on-line directive is official version and is immediately available.  
<http://starbase.msfc.nasa.gov:8000/directives/>
  - This is an element of agency system NODIS – NASA Online Directives Information System.  
[http://nodis3.gsfc.nasa.gov/library/main\\_lib.html](http://nodis3.gsfc.nasa.gov/library/main_lib.html)



## Knowledge Management at MSFC

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# NASA Standards Program

Paul S. Gill, Manager  
NASA Technical Standards Program  
Marshall Space Flight Center





## Knowledge Management at MSFC

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### Background and Context

- Traditionally, NASA “technical standards” were built around specific programs and organizations, e.g.,
  - Apollo, Shuttle, Space Station, Explorers...
  - NASA Field Centers - MSFC, JSC,...
- Liberal use was made of MIL-STD's. Agencywide technical standards were generally limited to specific areas:
  - Safety, Mission Assurance, Electronic Components
  - Construction of Facilities
  - Data Communications Standards
- Technical Standards were prescriptive and essentially “good forever”
- Establishment and use of an Agency-wide Technical Standards Program has been established and accepted.



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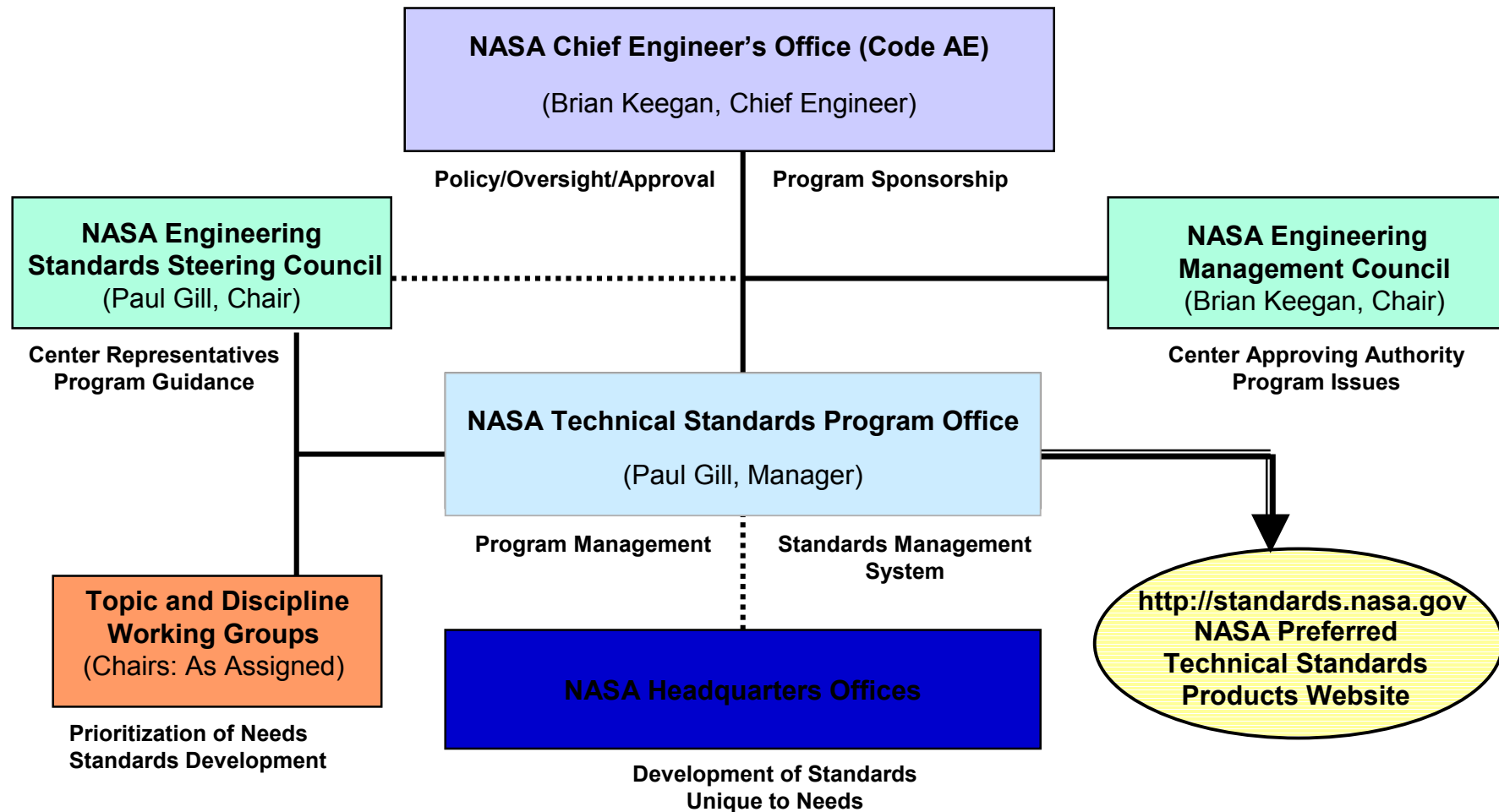
### Goals and Authority

- Goals
  - Improve and Maintain NASA's Engineering Capability
  - Capture and Preserve Engineering Lessons Learned and Best Practices
  - Facilitate the Insertion of Technology into all NASA Programs/Projects
  - Ref: NASA Strategic Plan, Provide Aerospace Products and Capabilities (PAPAC)
- Authority
  - NASA Policy Directive (NPD 8070.6), "Technical Standards", October 10, 1997 NASA Preferred Technical Standards Program Plan, April 15, 1999
  - NASA NPG 120.5, "NASA Programs and Project Management Processes and Requirements", April 3, 1998
  - Public Law 104-113, "National Technology Transfer and Advancement Act of 1995"
  - OMB Circular A-119, "Federal Participation in the Development and Use of Voluntary Consensus Standards and Conformity Assessment Activities" (Revised February 10, 1998)
- Delegation of Authority
  - Marshall Space Flight Center Designated as the Agency's Lead Center for the NASA Technical Standards Program



# Knowledge Management at MSFC

## Functional Diagram for the NASA Technical Standards Program





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### Major Program Elements

- NASA-Unique Standards Development Initiative
- Conversion of Center-Developed Standards to NASA Preferred Technical Standards (NASA or Non-Government) Initiative
- Voluntary Consensus Standards (Non-Government) Adoption and Development Initiative
- Standardization Awareness Initiative
- NASA Integrated Technical Standards Initiative
  - Agency-wide Full-text Technical Standards System
  - Standards Update Notification System (SUNS)
  - Lessons Learned/Best Practices/Application Notes/Standards Integration System
  - <http://standards.nasa.gov>



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### **Status of Agency-Wide Preferred Technical Standards (Development and Adoption)**

- Engineering
  - 20 - NASA Standards Published, 10 in Development
  - 891 - Standards Adopted From 40 Non-Government Voluntary Consensus Standards (VCS) Organizations
  - 311 - Non-Government Standards Pending Adoption as "NASA Preferred Standards"
  - 519 - Other Government Standards Adopted
  - 90 - Other Government Standards Pending Adoption
  - 91 - Center-Developed Standards Identified as Candidates for Conversion to a NASA Standard or VCS
- Safety and Mission Assurance
  - 23 - NASA Standards Published
- Information Technology
  - 19 - NASA Standards Published
- Data Communications
  - 22 - Consultative Committee for Space Data Systems (CCSDS) Standards Published/Adopted
- Facility Construction
  - Linked to SPECSINTACT system with >4000 standards
  - NASA Personnel Involved in the Development of Over 145 National and International Standards Developing Organizations, Committees and Working Groups



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### **NASA Integrated Technical Standards Initiative**

- Consists of Three Agency-wide (Full Text, Update Notification, Lessons Learned - Standards Integration Systems)
- Uniqueness is the Integration of Three Systems Into One Focused Web Site ("One Stop Shop")
- Provides an Agency-Wide Asset Accessible by All Field Centers, JPL, Headquarters Employees, and On-Site Support Contractors
- Minimizes Agency Costs and Maximizes Technical Standards and Related Information for Use by Programs/Projects
- Metrics Will Enable Considerable Management Visibility on Agency's Actual Technical Standards Usage and Needs



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### **NASA Integrated Technical Standards Initiative**

- Agencywide Full-Text Technical Standards System
  - A consolidated acquisition provides internet access to Technical Standards Products and associated information for Centers/JPL/HQ
- Standards Update Notification System
  - Continued use of out-of-date and cancelled Technical Standards identified as a major issue for the Agency's Programs/Projects
- Lessons Learned/Best Practices/Application Notes Standards Integration System
  - Documentation of Lessons Learned and Best Practices is a long-standing practice, but getting them used consistently has been a real challenge. Technical Standards are natural focal points for gathering and integrating Lessons Learned



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### **NASA Integrated Technical Standards Initiative**

- Agency-Wide Full-Text Technical Standards System
  - Accomplishments
    - Awarded Five-Year, Fixed Price Competitive Contract for System Inputs on 108 Domestic and International Standards Developing Organizations (SDOs) Standards Products, Including NASA and DOD, PLUS Related Standards Information
    - Updated Program Web-Site Format and Content
- Standards Update Notification System
  - Accomplishments
    - Developed the System and Obtained the Services of an Update Notification Information Input Provider
    - Obtained Update Notifications for the NASA Preferred Technical Standards.
    - Conducted "Pilot" with Solid Rocket Booster – TVC Subsystem; Update Notifications Were Submitted by United Space Alliance From KSC at Direction of Shuttle Projects Office





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### **NASA Integrated Technical Standards Initiative**

- Standards Update Notification System (Continued)
  - Standards Change Assessment Effort
    - Includes screening and identifying editorial and/or technical changes made in new standards products versus content of standards products superseded or replaced
    - Very few standards developers identify changes made
    - Significant value of information is to save time and costs associated with decision on making any program/project impact analysis regarding change in standard
    - Once done, change assessment information would be put on program website and provided to all users via standards update notification system
    - Effort not currently covered in NASA Technical Standards Program budget – with assistance from programs/projects, we anticipate a couple of years phase-over



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### **Lessons Learned/Best Practice/Application Notes Standard Integration System**

- Accomplishments
  - Lessons Learned/Best Practices Sites Currently On-line
    - 85 Links to Various NASA, Other Government, and Non-Government Aerospace Engineering Related Sites Via the Program's Website
  - NASA's Lessons Learned Information System (LLIS)
    - 100+ Lessons From LLIS Have Been Linked to 60+ NASA Preferred Technical Standards to Date. These are Available via the Program's Website
  - Specified Preferred Technical Standards Products Application Notes, as Provided by JPL, etc., and Made Available on Program Website



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### **Lessons Learned/Best Practice/Application Notes Standard Integration System (continued)**

- Near Term Plans
  - Address the Issue of Gathering System Products Usage Metrics
  - Improve Process for Acquisition of Application Notes From Standards Users Within Agency, Including Supporting Contractors
- Long Term Plans
  - Address the Issue of Linking NASA Technical Manuals/Reports to Applicable Standards
  - Periodic Review of LLIS to Capture Any New Lessons Learned
  - Periodic Search of Internet for Additional Lessons Learned/Best Practices Database Sites with Aerospace Engineering Applications
  - Assess Value to Programs/Projects of the Lessons Learned/Best Practices/ Application Notes – Standards Integration System



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### Summary

- Program Enjoys Strong “Grass Roots” Engineering Support Throughout the Agency
- Program’s Website Continues to Experience Increased User Visits
- The NASA Integrated Technical Standards Initiative is a Unique Endeavor – Not Duplicated Within Government or Industry



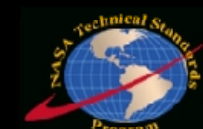
## Knowledge Management at MSFC

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# Back-Up Charts



# NASA Technical Standards Program



**Overview**

**Supporting Documents**

**Feedback**

**Help**

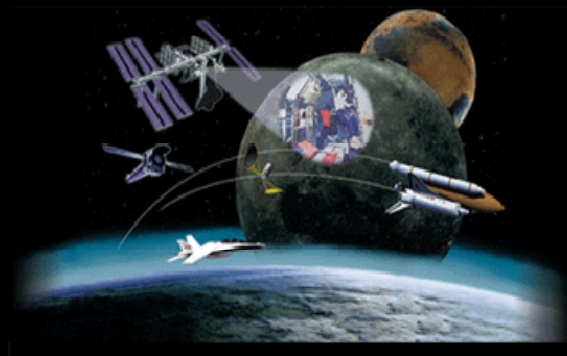
**Disclaimer**

## **NASA Access** (Logon Required)

- Agencywide Full-Text Technical Standards System (Access To NASA Preferred & Other Technical Standards Products)
- Standards Update Notification System (SUNS)
- Document Management System
- NASA Participation In Committees & Working Groups
- Standards Developing Organizations
- Lessons Learned / Best Practices

## **Public Access** (Logon Required)

- NASA Preferred Technical Standards Products
- Standards Developing Organizations
- Lessons Learned / Best Practices



## **What's New**

Legends an article by Stephen Lowell, Defense Standardization Program.

The NASA Technical Standards Program Office has placed a listing of active

Sponsored By: Office Of The NASA Chief Engineer

Program Manager: [Paul Gill](#)

Website Manager: [Brenda Lance](#)

Curator: [Kalpana Shiva](#)

This page modified on: October 11, 2001



### Summary page

<b>MIL-STD-1686</b>	Revision: C	Status: Active	NASA Status: Preferred
<a href="#">DoDISS info</a>	No. of NASA Accesses since 06/2001: 13	SDO: MIL	Year Reaffirmed:
<b>TITLE: ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS, ASSEMBLIES AND EQUIPMENT (EXCLUDING ELECTRICALLY INITIATED EXPLOSIVE DEVICES) (SUPERSEDING <a href="#">MIL-STD-1686B</a>)</b>			<a href="#">Request Update Notification (SUNS)</a>
Base	Date: 10/25/1995	19 pages	<a href="#">View Doc</a> <a href="#">View TOC</a>

### Document Scope

**[Base - 10/25/1995]**

The purpose of this standard is to establish comprehensive requirements for an ESD control program to minimize the effects of ESD on parts, assemblies, and equipment. An effective ESD control program will increase reliability and decrease both maintenance actions and lifetime costs. This standard shall be tailored for various types of acquisitions.

### Application Notes

[Submit Application Note](#)

Applicable Revision	Project ID	NASA Center	Creation Date	Note
-	-	JPL	4/26/2001	Requires that each facility have a document that describes how they implement ESD controls (for example, see MSFC-RQMT-2918).

### Lessons-Learned and Best-Practices

LL/BP No.	Title	Date	Relevance to the Standard
<a href="#">685</a>	Electrostatic Discharge (ESD) Control in GSE	2/1/1999	The Lesson provides technical recommendations for the control of ESD in aerospace equipment.
<a href="#">732</a>	Electrostatic Discharge (ESD) Control in Flight Hardware	2/1/1999	The Lesson addresses the generation of triboelectric and electrostatic charges as a common cause of damage and/or degradation to unprotected Electrostatic Discharge Sensitive (ESDS) devices. A carefully devised and implemented ESD control program can provide protection from this damage and/or degradation.

### Document History

Document No.	Rev	Date	Title	Status
<a href="#">MIL-STD-1686B</a>	B	12/31/1992	ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS, ASSEMBLIES AND EQUIPMENT (EXCLUDING ELECTRICALLY INITIATED EXPLOSIVE DEVICES) (S/S BY MIL-STD-1686C) (SUPERSEDING MIL-STD-1686A)	Superseded
<a href="#">MIL-STD-1686A</a>	A	08/08/1988	ELECTROSTATIC DISCHARGE CONTROL PROGRAM FOR PROTECTION OF ELECTRICAL AND ELECTRONIC PARTS, ASSEMBLIES AND EQUIPMENT (EXCLUDING ELECTRICALLY INITIATED EXPLOSIVE DEVICES) (METRIC) (S/S BY MIL-STD-1686C)	Superseded





To Request Standards Update Notification(s), Enter Complete or Partial Document Number. Select "Search" Button

Document Number:

### Request Update Notification

1 Record(s) Found.

Your Program/Project/Organization: NASA Technical Standards Program

Enter Notice Type Desired (Select one)	Revision Level Currently Using	Document Number (Click on document number to view details)	Document Title	Application Note or Lessons Learned/Best Practices
<input checked="" type="radio"/> ALL <input type="radio"/> SELECT TYPES	<input type="text" value="A"/>	<a href="#">MIL-STD-1686</a>	Electrostatic Discharge Control Pro-gram for Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)	<ul style="list-style-type: none"><li>• <a href="#">Submit Application Note</a></li><li>• <a href="#">View Application Notes</a></li></ul>





# Knowledge Management at MSFC

## NASA Preferred Technical Standards By Categories

<u><a href="#">Documentation and Configuration Management, Program Management</a></u> Configuration & Documentation Mgmt, Packaging, shipping & Handling, Reproduction & Document Archiving
<u><a href="#">Systems Engineering and Integration, Aerospace Environments, Celestial Mechanics</a></u> Orbital & Celestial mechanics, Aerospace Environments, System Engineering and Integration
<u><a href="#">Computer Systems, Software, Information Systems</a></u> Computer Design (Flight & Ground), Software Design (Flight & Ground), Computer & Software Security, Information Systems(ADP) & Network Communications Design
<u><a href="#">Human Factors and Health</a></u> Ergonomics, Health Science
<u><a href="#">Electrical Systems, Electronics, Avionics/Control systems, Optics</a></u> Electrical / Electronic Design including Printed Circuit Boards & Electrical Ground & Airborne Support Equipment Electromagnetics and Electrical Discharge Control Guidance & Control, & Optics
<u><a href="#">Structures/Mechanical systems, Fluid, Thermal, Propulsion, Aerodynamics</a></u> Structural Design including Stress Corrosion control, Mechanical Design Including Mechanical & Propulsion Ground and Airborne Support Equipment, Propulsion Design, Thermal Design, Flight & Fluid Dynamics
<u><a href="#">Materials and Processes, Parts</a></u> Materials & Materials testing including Fluids & Propellants, Material Processes, manufacturing, Parts (Mechanical, Electrical, Optical)
<u><a href="#">System Test, Analysis, Modeling, Evaluation</a></u> System and Subsystem testing including Environmental testing, Test Evaluation, Analysis and Modeling
<u><a href="#">Safety, Quality, Reliability, Maintainability</a></u> Safety (Flight, ground, Personnel and Equipment), Quality (Hardware and Software), Reliability (Hardware and Software) Maintainability (Hardware and Software)
<u><a href="#">Operations, Command, Control, Telemetry/Data Systems, Communications</a></u> Flight and Ground Operations, Mission Command & Control, Telemetry and Data Systems Design, RF Communicatins Design
<u><a href="#">Specifications and Standards for use on Construction Projects (SPECSINTACT)</a></u>

Document: 2001-12-11-2001

Inbox - Microsoft Outlook | Microsoft PowerPoint - 12-2... | Netscape



## Knowledge Management at MSFC

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# NASA Integrated Technical Standards Initiative

- Types of Technical Standards Products
  - Technical Standards: Documents that establishes uniform engineering and technical requirements for processes, procedures, practices, and methods that have been adopted as standard, including requirements for selection, application, and design criteria of an item.
  - Specifications: Documents prepared specifically to support acquisition which clearly and accurately describes essential technical requirements for purchased items. Procedures necessary to determine that the requirements covered by the specification have been met are also included.
  - Handbooks: Authoritative engineering, technical, or design information and data relating to processes, procedures, recommended practices, and methods. Handbooks are the result of the consensus process and may evolve into standards through application and industry acceptance.
  - Guidelines: Technical information in support of Standards, Specifications, and Handbooks. Guidelines provide instructions and data for the application of standards and recommended practices, procedures, and methods. Recommended Practices are in this category, as well as preliminary standards.
  - Regulations: Standards which are accepted by and enforced by a government unit.
  - Codes: A group of standards dealing with one subject such as fire, electrical, building, plumbing, boilers, etc.



## Knowledge Management at MSFC

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### **NASA Integrated Technical Standards Initiative**

- Levels of Standardization
  - Company Standard: For internal use within own organization.
  - Consortium Standard: Consensus among a small group of organizations, usually like-minded companies, formed to undertake an activity that is beyond the resources of any one member.
  - Industry Standard: Group having a common industrial classification.
  - Voluntary Consensus Standard (Non-Government): Developed by representatives of all sectors that have an interest in the use of the standard. This is considered the most technically sound and most credible of documents due to the broad inputs and consensus.
  - National or Government Standard: Most countries have national standards. In the U.S. there are no “National Standards”. U.S. Government Standards fall into two areas - Procurement Documents and Regulatory Documents.
  - International Standard: Created by representatives from two or more countries, and, in turn, are used in more than one country ( ISO, IEC, CEN, CENELEC, DIN, BSI, etc.).



## Knowledge Management at MSFC

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# NET- CSSI

Jim Parker  
Marshall Space Flight Center  
Engineering Directorate



## Knowledge Management at MSFC

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### **NET - CSSI**

**NASA Engineering Training  
Comprehensive  
Systems  
Skills  
Initiative**



## Knowledge Management at MSFC

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### Background

- CSSI is an MSFC and Headquarters joint initiative
- MSFC requested to be the pathfinder in an Agency effort to emphasize systems skills development
- The CSSI curriculum template praised by NASA Chief Engineer's Office and "pilot program" curriculum was designed, developed and has been delivered four (4) times at MSFC. See knowledge base for fourth offering at <http://netcssi.nasa.gov/netcssi4.html>
- Video taping of first two offerings are also archived
- Pilot program feedback was used to streamline this curriculum
- Class feedback used to improve the curriculum



## Knowledge Management at MSFC

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### **What is NET-CSSI**

- NASA Teaching NASA
- Retirees and Employees
- Centers preserving Engineering Experience
- Engineers leaving their Legacies
- Introducing learned Experience
- Increasing Engineering Process Efficiency
- Managers and Designers Becoming Systems Engineers
- Increasing the Center's Win-Rate



## Engineering Training



### Engineering of Systems

Engineering of Systems  
(entry course)

System Requirements

System Design

Software Process  
Improvement

Manufacturing  
Engineering

Software Acquisition

Software Engineering

VVT&E

Special Topics

### Comprehensive System Skills Initiative

MSFC

### Enterprise-Specific Training

Space Science

Earth Science

Aeronautics

HEDS





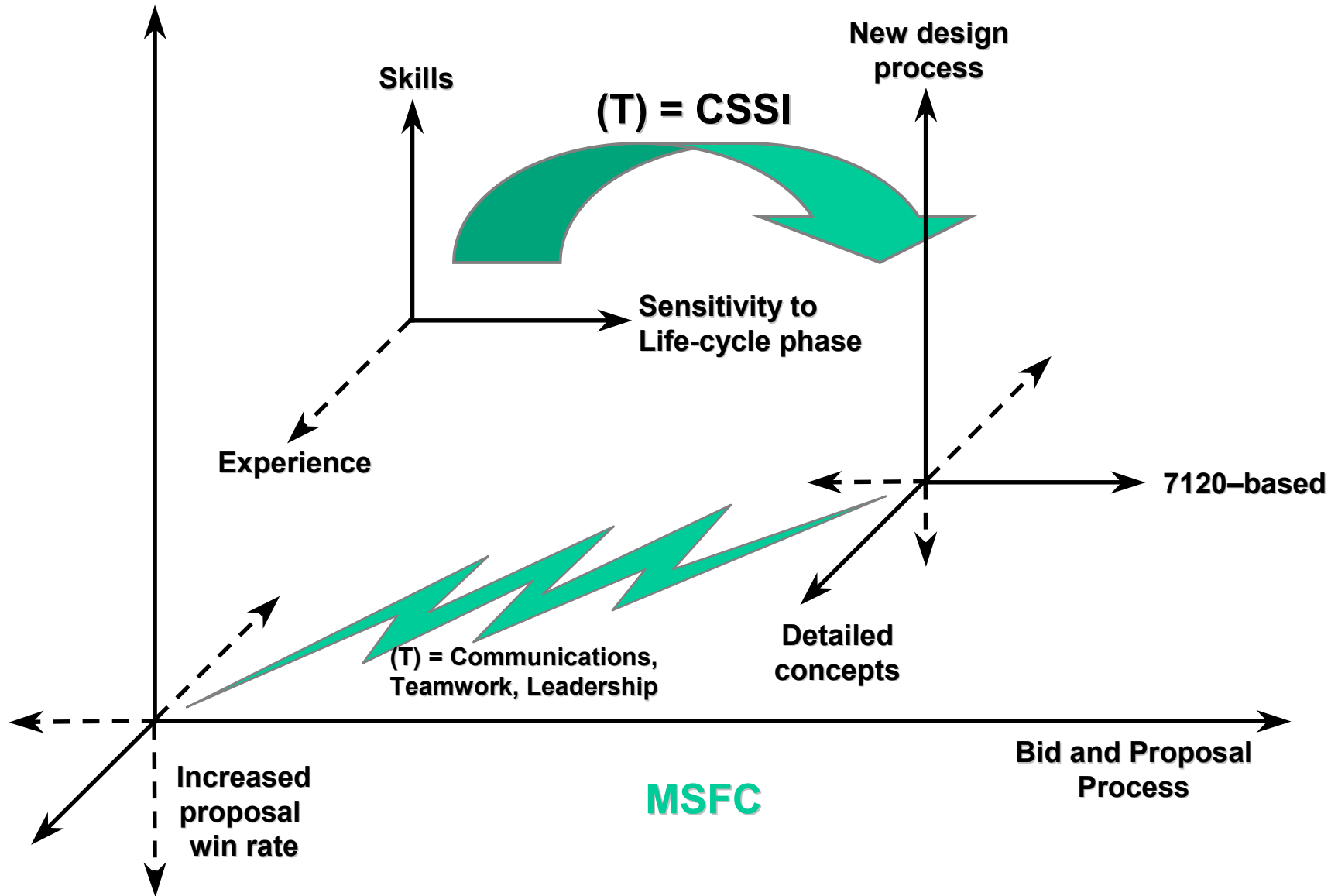
## Knowledge Management at MSFC

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### Design Sub-Disciplines (a subset)

- Program/Project Management
- Materials Processes and Manufacturing
- System Engineering
- Space Environmental Effects (none destructive testing, tribology, and materials selection)
- Requirements and Verification
- Metals Fundamentals, Design Selection, Surface Science, Stress Corrosion, Application of Instruments, Hydrogen Embrittlement, Metals Processing
- Design Standards and Specification
- Composites, Ceramic, Non Metalics, Matrix Materials, Fiber Choices
- Configuration Management
- Advanced Manufacturing
- Data Management
- Thermal/Vacuum Testing
- Technology
- Guidance, Navigation, Control
- Leveraging Technogy
- Propulsion
- Technology Assessing and Roadmapping
- Aerodynamics
- Technology Development thru Roadmapping
- Introduction to Fluid Mechanics and future vision
- Safety and Mission Assurance Overview
- Induced Environments
- Risk Based Procurement
- Computational Fluid Dynamics
- Risk Management
- Cold Flow Testing
- Casting
- Development and Management of Mission Critical Software
- Vibraacoustics
- EEE Parts List and Packaging
- Thermal
- Control Electronics
- Structural Testing

# Design-to-Cost





## Knowledge Management at MSFC

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# Virtual Research Center

Dan O'Neil  
Marshall Space Flight Center  
Engineering Directorate



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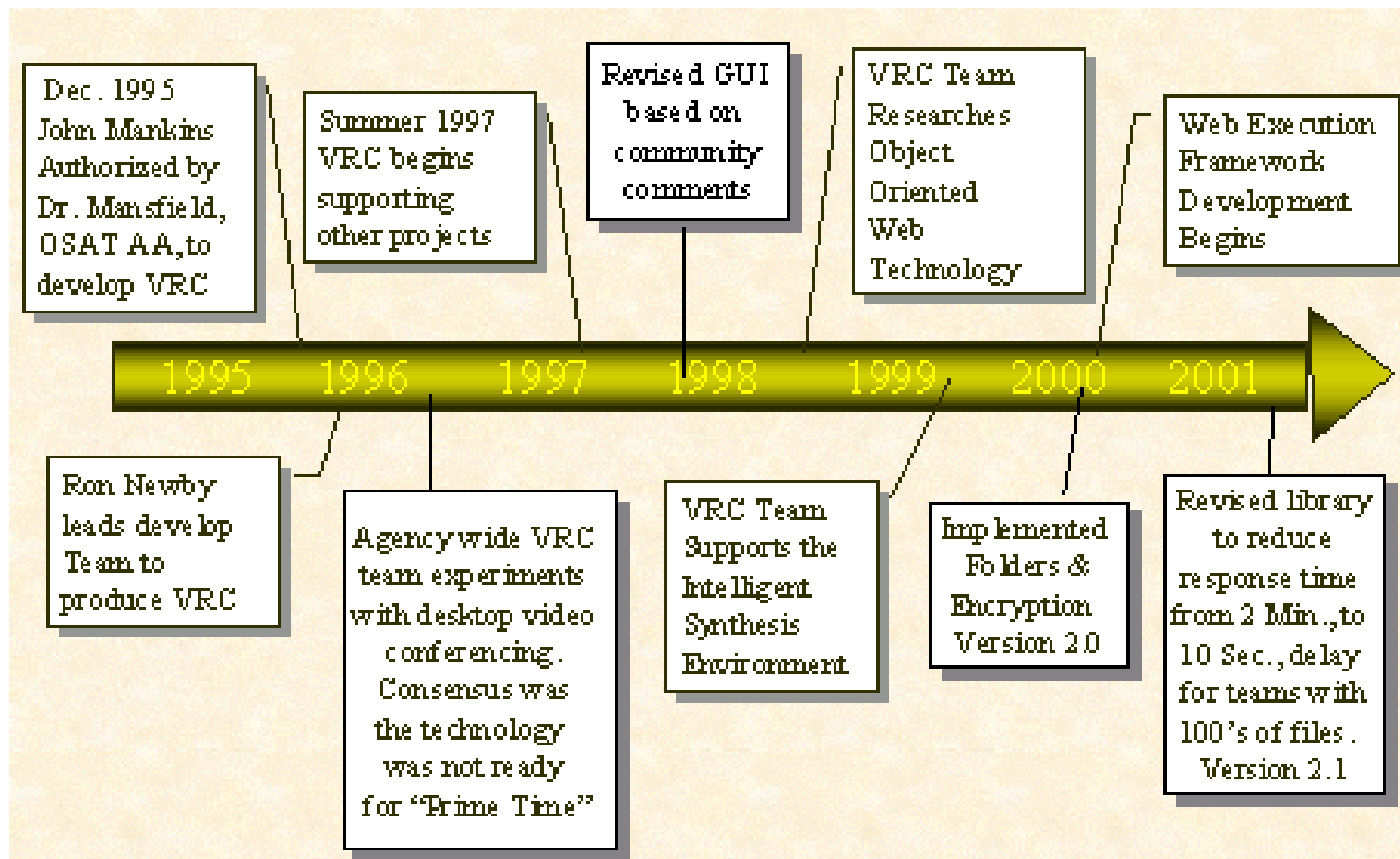
### **Virtual Resource Center**

- Brief History
- Work Breakdown Structure
- Online Project Management System (OPMS)
- System Growth Statistics



## Knowledge Management at MSFC

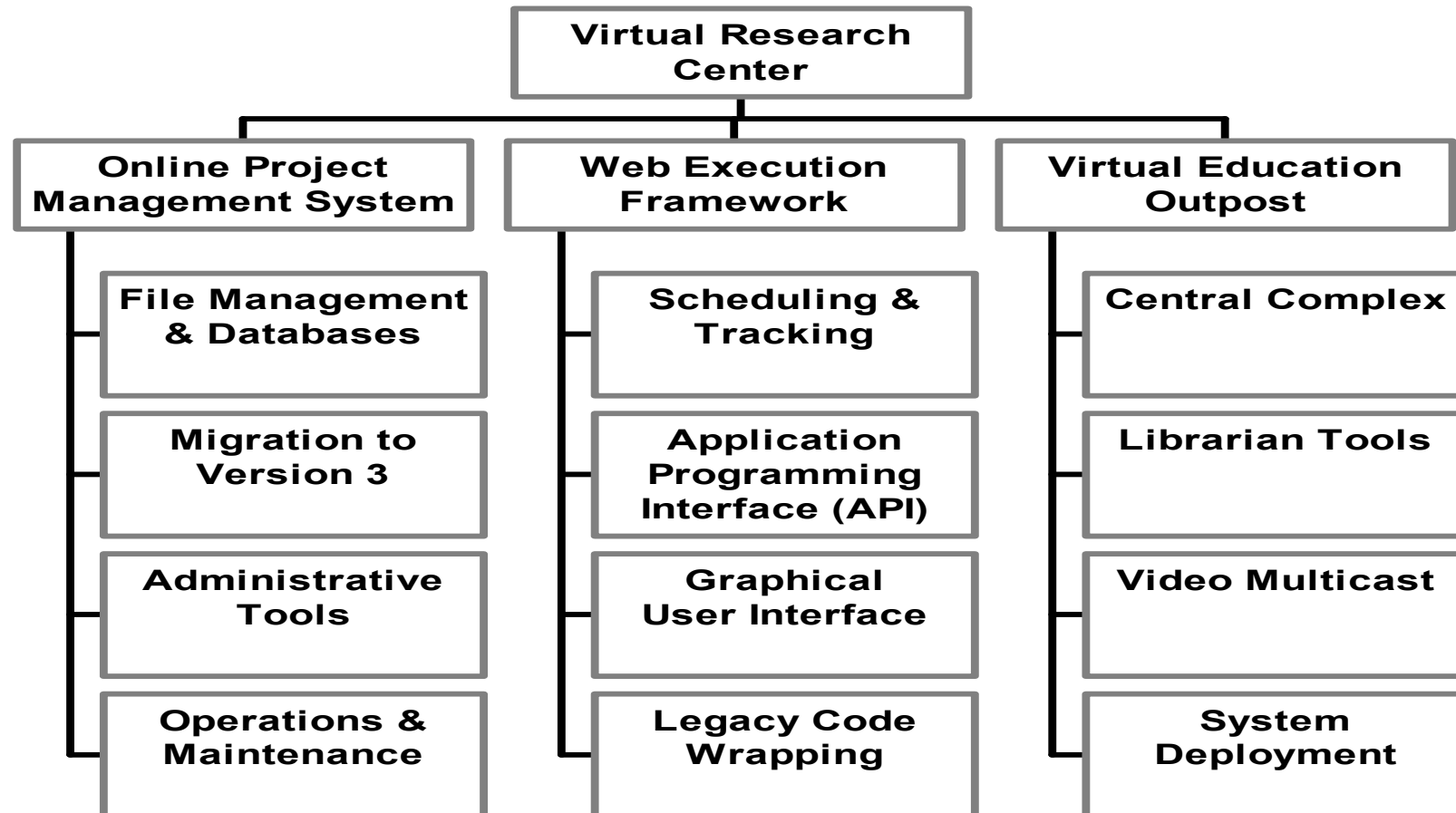
### Virtual Research Center History





## Knowledge Management at MSFC

### Work Breakdown Structure





## Knowledge Management at MSFC

### Online Project Management System

- Web Based Extranet for Collecting, Archiving, Reporting, & Managing Project Information
- Standard, Secure, Scalable, Adaptable Architecture
- System Administration Tools for Quick Construction of workgroups



### Statistics as of July 13, 2001

Number of Registered Users	<b>3,392</b>
Number of Documents	<b>27,095</b>
Number of Action Items	<b>1,827</b>
Number of Active Teams	<b>~ 150</b>
Total Number of Teams	<b>~ 300</b>
Avg. Number Users/Weekday	<b>186</b>
Avg. Number Users/Weekend	<b>73</b>

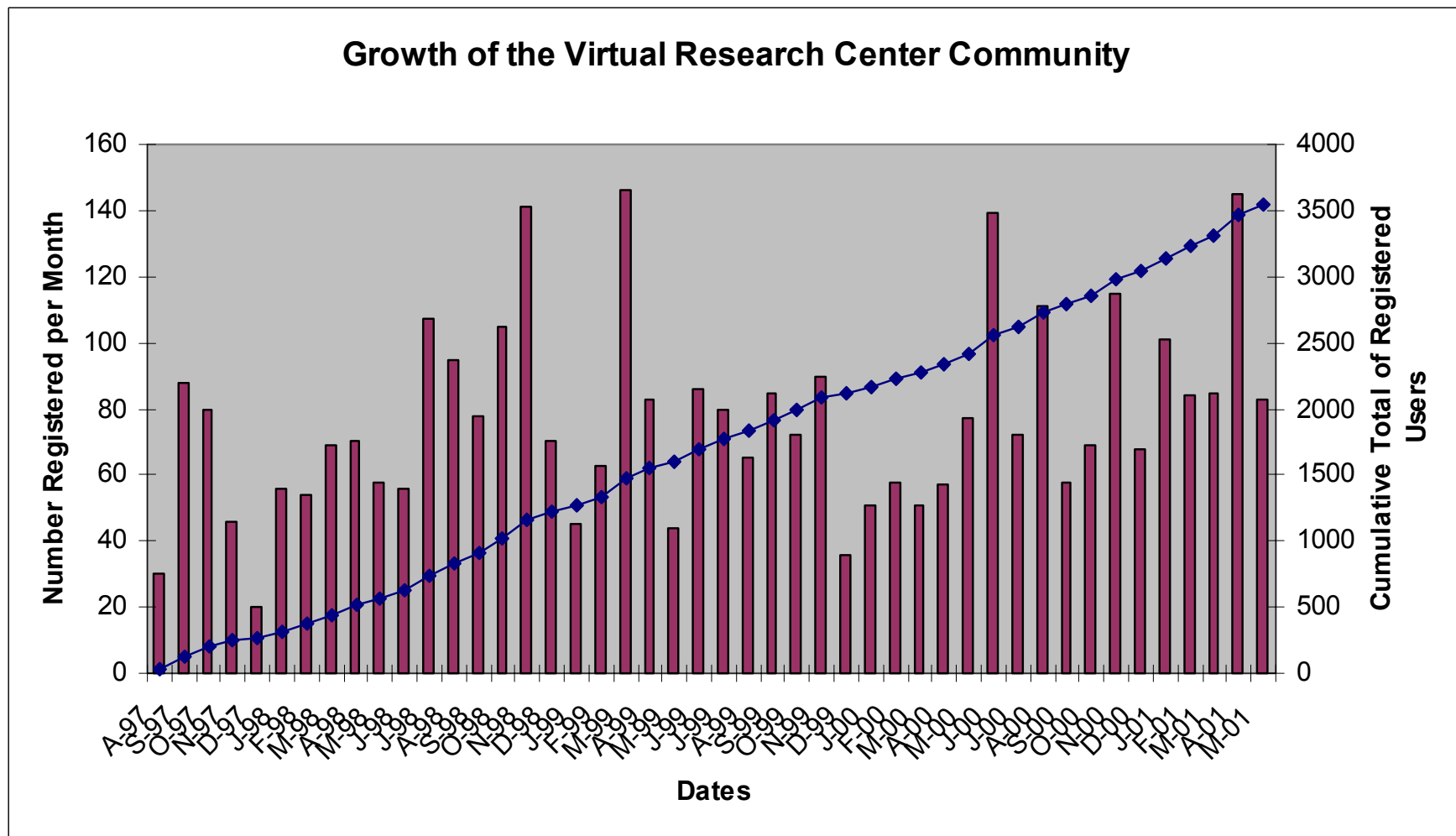
### Collaborative Tools

- File Management System
- Team Directory
- Calendar
- Action Item Tracker
- Search Engine
- Topic Discussion Tool
- Activity Reports



## Knowledge Management at MSFC

### Growth History from 1997 to Present







## Knowledge Management at MSFC

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# Integrated Configuration and Data Management System (ICDMS)

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Engineering Directorate



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### **Integrated Configuration and Data Management System (ICDMS)**

- Integrates into a single system MSFC CDM processes, including but not limited to:
  - Documentation baselining and release
  - Engineering change processing, tracking and status accounting
  - Data tracking, control and storage in an online repository



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### **Integrated Configuration and Data Management System (ICDMS)**

- The ICDMS, with its advanced innovative IT concepts, will enhance program/project activities by providing:
  - Web-based user interface
  - User authentication
  - Advanced security
  - Workflow automation
  - Action item management.
  - Electronic notification
  - On-line forms and reports
  - Drawing and document redline and markup
  - Center-wide data vault



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### **Integrated Engineering Capability (IEC)**

- Initially components
  - VRC - Virtual Resource Center
  - MDA - Multi-Disciplinary Design Analysis
  - Visual Manufacturing
  - ICDMS - Integrated Configuration and Data Management System
- Hopefully expanding to
  - Business, Financial, and Procurement
  - S&MA
  - ??



## Knowledge Management at MSFC

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# Web Content Management

Justin Jackson  
Information Services Department  
Marshall Space Flight Center



## Knowledge Management at MSFC

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### **What Is a Content Management System (CMS)**

- A technical framework which supports publishing, tracking, controlling and delivering any kind of content to multiple audiences and multiple devices via the internet.



## Knowledge Management at MSFC

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### **What CMS Can Do for NASA**

- Agency Identity/Branding
- Publishing
- Personalization
- Merge of Multiple Content Sources
- Multiple Device Delivery



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### Where are We Now

- Participating in eNASA initiative
  - Extensive research
    - Needs analysis
    - Delivery architecture analysis
    - Survey of products
      - Industry dynamics require constant update
      - Market leaders: Vignette, Interwoven, Documentum (recently moved to the top three)





## Knowledge Management at MSFC

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### What is Next

- Phase II – eNASA Initiative
  - Work with web management team to determine the following:
    - Refine requirements
    - Define business process
    - Determine best software solution
    - Design architecture
    - Map out an implementation plan



## Knowledge Management at MSFC

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### **Other KM Initiatives at MSFC**

- SOLAR- The NASA Site for On-line Learning and Resources is a collection of web based courses.
- MAPTIS – Materials and Processes Technical Information System is the only NASA-wide approved database of materials properties and NASA-STD-6001 results.